UNITED
NATIONS

E

Economic and Social Council

Distr.
LIMITED

E/CN.16/1993/L.3/Add.2
20 April 1993

ORIGINAL: ENGLISH

COMMISSION ON SCIENCE AND TECHNOLOGY
FOR DEVELOPMENT
First session
12-23 April 1993
Agenda item 12

ADOPTION OF THE REPORT OF THE COMMISSION ON ITS FIRST SESSION

Draft report

Addendum

Rapporteur: Mr. Asrat BULBULA (Ethiopia)

Chapter ___

SCIENCE AND TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT

1. The Commission considered item 6 of its agenda at its 5th and 6th meetings, on 13 April 1993. It had before it the note by the Secretary-General on the implications of the outcome of the United Nations Conference on Environment and Development, including Agenda 21, for the work of the Commission on Science and Technology for Development (E/CN.16/1993/8) and the report of the Secretary-General on the utilization and marketing of energy technologies, focusing on policy issues and options for the effective transfer and application of environmentally sound energy technologies (E/CN.16/1993/9).

A. Scientific and technological implications of sustainable development

2. In her introduction, the Director of the Division of Science, Technology, Energy, Environment and Natural Resources emphasized the role of science and technology for sustainable development, as outlined throughout Agenda 21. The main function of the Commission on Science and Technology for Development would be to provide advice to the Economic and Social Council in the areas of science and technology for sustainable development. With regard to the future work of the Commission, the Commission might wish to consider the following three areas:

(a) endogenous capacity-building in science and technology for achieving sustainable development objectives, particularly in developing countries; (b) technology assessment and forecasting in support of decision-making in science and technology; (c) information management as an essential means for technology assessment and forecasting.

3. The main points of the discussion are presented in the paragraphs below.

4. The provisions of Agenda 21 related to science and technology provide a sufficient framework for the work programme of the Commission. Sustainable development is an integrated concept consisting of mutually dependent ecological, social, economic and technological components to be taken into account in making decisions aimed at applying science and technology for achieving sustainable development objectives. The definitions of environmentally sound technologies provided in Agenda 21 constituted a good starting-point for the more complex conceptualization of sustainable development. Scientific knowledge and technological know-how were needed if sustainable development was to be achieved in developing countries.

5. Since environmental damages often became evident only after they were irreversible, early warning systems were needed to anticipate environmental degradation, along with mechanisms for assessing the local environmental effects of new technologies. That would also support the prevention of the transfer of environmentally "unsound" technologies. The financial implications of science and technology for sustainable development needed to be carefully considered.

6. There was a need to develop guidelines for the efficient interaction with the subsidiary bodies of the Economic and Social Council, particularly with the Commission on Sustainable Development.

7. To enhance the quality of its work, the Commission should make concrete recommendations with a view to (a) identifying work areas and activities to be incorporated in the future work programme of the Commission, taking into account available resources and the potential for their implementation; (b) addressing modalities for the effective interaction with the Commission on Sustainable Development; (c) promoting coordination of activities of the United Nations system in the areas of science and technology for sustainable development.

8. The Commission should group the four work areas identified in the note by the Secretary-General (E/CN.16/1993/8) under one heading and should deal specifically with the application of science and technology for sustainable development and capacity-building in science and technology for sustainable development. It should make proposals on how to provide and facilitate the transfer and application of environmentally sound technologies in priority areas and ways to integrate environmental impact assessment with technology assessment. It should also elaborate on the integration of the concepts of sustainable development and environmentally sound technology in the context of specific conditions and needs of developing countries and economies in transition and on strengthening the role of the scientific and technological communities. The Secretariat was requested to further examine the relationship between science and technology and sustainable development, as well as modalities for effective interaction with the Commission on Sustainable Development.

9. The representative of the United Nations Educational, Scientific and Cultural Organization (UNESCO) indicated that in the early 1950s her organization had pioneered the promotion of renewable energy as a strategy for long-term sustainable development. UNESCO promoted international interdisciplinary activities to stimulate research in and evaluation of global energy problems and to develop training and information programmes to sensitize both specialists and the general public on new energy sources and energy conservation.

10. The representative of the International Labour Organisation (ILO) stated that an ILO survey suggested that during the course of economic development, environmental degradation increased at first and then began to decline.

11. The representative of the World Engineering Partnership for Sustainable Development (WEPSD) stated that his organization was dedicated to unifying the world engineering community to facilitate sustainable development. The primary objective of WEPSD was to create a global network for all engineers through technical advice and information sharing, capacity-building activities, research and development and the demonstration, dissemination and adaptation of environmentally benign technologies.

12. The representative of the Union of International Technical Associations (UITA) observed that Agenda 21 had identified new challenges for the engineering community. In its programmes, UITA directed attention to training and capacity-building activities aimed at improving the standard of education of technicians and engineers in developing countries. To that end, an International Congress of Engineering Deans and Industry Leaders was being organized in close cooperation with UNESCO.

13. The representative of the Third World Academy of Sciences (TWAS) presented the Academy's proposal to establish a network of 20 international centres for science, technology and environment in selected countries of Africa, Asia and Latin America. Those centres of excellence would provide, among other activities, a massive training programme aimed at raising the number of scientists in developing countries from 165 to 1,000 per million inhabitants by the year 2001.

14. The representative of the American Association of Engineering Societies (AAES), in his statement, elaborated on the critical role that engineers play in achieving sustainable development objectives.

15. The representative of the International Council of Scientific Unions (ICSU) stated that ICSU, in collaboration with the World Meteorological Organization, had initiated a world climate research programme to investigate the physics of the climate system and to develop tools for prediction. That activity focused on understanding the interactive physical, chemical and biological processes that regulate the total Earth system.

B. Transfer and application of environmentally sound energy technologies

16. The Director of the Division of Science, Technology, Energy, Environment and Natural Resources stressed the relationship between energy, environment and development, and the resulting paradox: while energy was the prime mover of development, its use and consumption lay at the root of many of the environmental problems. The report of the Secretary-General (E/CN.16/1993/9) provided a brief description of the range of available and emerging energy technologies; discussed policy issues and options for the effective transfer and application of environmentally sound energy technologies; and proposed international and regional cooperation, particularly in the areas of technology assessment, financing and the establishment of appropriate information networks.

17. In clarifying the issue regarding the division of labour among the Commission on Science and Technology for Development and the two Expert Committees, on Natural Resources and on Energy, respectively, the Director referred to the ongoing restructuring, which would have relevance for coordination or for support to intergovernmental bodies. Recommendations on that issue, which the Commission might wish to communicate to the Economic and Social Council, would support the future effective interaction of the intergovernmental bodies dealing with questions related to science and technology.

18. The Commission noted that energy use would increase with development, and that would compound many of the environmental problems already resulting from the combustion of fossil fuels. Because of a lack of financial resources and the often inadequate institutional and technical capacity, developing countries had few, if any, alternatives to the energy systems now in use. Furthermore, many of the new "clean technologies" were still in a demonstration phase and were not yet ready for commercialization. Some, such as solar energy, were in incipient stages of exploitation, but might be the most viable solution for areas remote from the electrical grid. More attention should also be given to hydropower.

19. Two important areas for new energy technologies were those using "dirty" coal for power generation and natural gas for transport. A recent project supported by the Economic and Social Commission for Asia and the Pacific (ESCAP) for substituting compressed natural gas (CNG) for diesel fuel in several Asian countries had met with considerable success.

20. Transfer of new energy technologies was needed, but must be done only after a careful assessment of the impact of the technology within a specific context. Developing countries should not become testing grounds for unproven technologies. It was also important to understand and evaluate how "unsound" technologies could continue to be transferred. Centres of excellence might help, but should be concerned with traditional as well as advanced energy technologies. In addition, without endogenous capacities and particularly the relevant training, the transfer of new energy technologies could worsen an existing situation. The institutional and managerial components might, however, also be transferred, particularly at the regional and subregional levels. Systems of information on new energy technologies, as well as on other technologies and related policies, were essential to making good technological

decisions at the national level. Parallel to that, all countries needed to have access to current and accurate data, including the managerial and technical support required.

21. The key to the transfer of new energy technologies was financing. Joint efforts among developed and developing countries and countries in transition were needed to establish research and development strategies for the generation, transfer and effective use of environmentally sound energy technologies, including the provision of resources needed for the demonstration and commercialization of such technologies. The modalities for assisting the transfer of environmentally sound technologies to developing countries must be explored in more detail.

22. Continued emphasis was placed on the importance of education, including technical training, and on other aspects of endogenous capacity-building, including technology assessment and the strengthening of institutional, organizational and managerial capabilities.

23. The representative of the non-governmental organization Sunsat Energy Council stressed the new ways to protect the environment while advancing development. While the environmental and societal advantages of the widespread use of practical terrestrial renewable energy options were worth pursuing, it was also critical to develop promising energy production options that could sustain global economic growth without creating irreversible damage to the ecology. As part of any assessment of alternative energy sources, inexhaustible solar energy must be seriously considered. Baseload power could be provided by converting solar energy in space for use on Earth for distribution on a global scale. That could be accomplished with solar power satellites (SPS) in Earth orbits or, in the more distant future, constructed on the lunar surface.

24. In summarizing the debate on agenda items 6 (a) and (b), the Chairman expressed appreciation to the Secretariat for the quality of the two documents prepared for the agenda item and endorsed the main suggestions contained therein. He also expressed his appreciation to the organizations and agencies of the United Nations system for their many useful and substantive interventions and suggested that they provide to the Commission at its second session written information on all of their relevant activities.

25. The Commission considered Agenda 21 a good framework for its deliberations and recommendations to the Economic and Social Council, taking into account the need for close interaction with the new Commission on Sustainable Development. In particular, recommendations could address (a) measures to enhance the role and the impact of science and technology in developing countries and economies in transition; (b) measures aimed at strengthening international cooperation in science and technology for sustainable development; and (c) coordination of relevant activities of the United Nations system. While the concept of sustainability was understood in its broadest sense, it was emphasized that efforts to operationalize the concept should be concrete and geared towards implementation. The need for funding for the transfer of environmentally sound technology was underscored.

26. The Chairman noted the Commission's strong emphasis on the transfer and application of environmentally sound energy technologies. Fossil fuels were

addressed in particular, in view of their important economic role and their largely negative impact on the environment. The Commission placed special emphasis on ways and means of increasing energy efficiency, as well as on modalities for fostering the development and transfer of clean energy technologies.